

XXIV. *Descriptions of Five new Species of the Genus Pinus, discovered by Dr. COULTER in California. By Mr. DAVID DON, Libr. L.S.*

Read June 2nd, 1835.

THE accession of new species which this highly important genus has received of late years, by the labours of Mr. Douglas, Dr. Wallich, and others, affords a striking example of the superior intelligence and zeal with which scientific researches in distant countries are prosecuted in our times. Mr. Douglas's travels in the North-west regions of the American continent has made us acquainted with seven new species of this genus, some of which are remarkable for their vast size. So large an addition to these giants of the forest from one quarter was scarcely to have been looked for, but the soil and climate of those regions, especially the western flanks of the northern Andes, and the extensive parallel ranges of mountains which extend from south to north through California, appear to be peculiarly favourable to the development and growth of the Fir tribe: for notwithstanding the successful labours of my lamented friend Mr. Douglas, already mentioned, I have to record in this paper five more species collected in the same countries by my learned and indefatigable friend Dr. Coulter, whom a zeal for the advancement of science has led him to devote ten years to the investigation of the natural history of Mexico and California. In the latter country he spent nearly three years, and having visited regions unexplored by Mr. Douglas, many new species have been added to those already made known by that enterprising botanist, and among them the five species of *Pinus* already noticed.

As but a very small proportion of the mountainous parts of that interesting country has been explored, it may be reasonably inferred that many new species of hardy trees, and especially of the Fir tribe, still remain to recompense the labours of some future botanist.

I shall now proceed to lay before the Society the descriptions of the five

new species of *Pinus*; and I have to regret that the specimens of three of them are without leaves, Dr. Coulter not having been able to find them, from the want of a convenient opportunity to arrange his vast collections. The cones of these, however, are so marked as to leave no doubt of their constituting three very distinct species.

#### 1. PINUS COULTERI.

*P. foliis ternis prælongis compressis: vaginis filamentoso-laceris, strobilis oblongis solitariis maximis: squamis cuneatis: apicibus elongatis incrassatis lanceolatis mucronatis ancipiti-compressis aduncis.*

*Habitat* in Californiâ, in montibus Sanctæ Lucię, alt. 3000—4000 ped. *Coulter.*  
h. (v. s. sp.)

*Arbor* magna, robusta, altitudine 80- v. 100-pedalis, cortice spadiceo obducta, ramis amplis, apice diffusis. *Ramuli* è squamarum stipularium basibus callosis toruloso-tuberculati, crassitie pollicares. *Folia* terna, rarè quaterna v. quina, dodrantalia, incurvata, compressiuscula, mucronata, suprâ bisulca, subtùs planiuscula, margine lineâque mediâ elevatâ tenuissimè serrulatis. *Vagine* sesquiunciales, crassitie pennæ corvinæ, basi tumidæ: *squamis* ovato-lanceolatis, acuminatis, cartilagineis, spadiceis, nitidis, adpressis, margine scariosis, albis, filamentoso-laceris; *inferioribus* brevissimis, carinatis; *stipularibus* majoribus, longiùs acuminatis, basi cucullatâ callosâ induratâ persistenti. *Strobili* omnium maximi, conico-oblongi, pedales et ultrâ, diametro ad medium semipedem adæquant, et libras quatuor circiter pondere: *squamis* cuneatis, apicibus elongatis, lanceolatis, mucronatis, ancipiti-compressis, obsoletè quadrangulis, incurvato-aduncis, crassissimis, induratis, lævibus, nitidis, spadiceis, margine acutis, 1—3-uncialibus; *inferioribus* longioribus, deflexo-patentibus.

Discovered by Dr. Coulter on the mountains of Santa Lucia, near the Mission of San Antonio, in latitude 36°, within sight of the sea and at an elevation of from 3000 to 4000 feet above its level. It was growing intermingled with *Pinus Lambertiana*. The tree rises to the height of 80 or 100 feet, with large permanent spreading branches, and the trunk is 3 or 4 feet in diameter. The leaves are longer and broader than those of any other Pine, and the cones

which grow singly are the largest of all, being often more than a foot long, half a foot in diameter, and weighing about four pounds. The spinous processes of the scales of the cone are very strong, hooked and compressed, 3 or 4 inches in length, and about the thickness of one's finger, characters which essentially distinguish it from *P. Sabiniana*, described in the 16th volume of the Society's Transactions. These, together with the following species, and *P. pungens* of Michaux, constitute a very distinct section characterized by their permanent cones, with the points of the scales elongated and spinous.

At the suggestion of Mr. Lambert I have applied to this remarkable tree the name of its discoverer, who is no less distinguished for his scientific acquirements than for the excellent qualities of his mind.

## 2. PINUS MURICATA.

*P. foliis ternis? strobilis inæquilateri-ovatis aggregatis: squamis cuneatis apice dilatatis umbilico elevato mucronatis; baseos externæ elongatis ancipiti-compressis recurvato-patentibus.*

*Habitat* in Californiâ ad locum San Luis Obispo Hispanicè dictum, alt. 3000 ped. *Coulter. h. (v. s. sp.)*

*Arbor* recta, mediocris, altitudine circiter 40 pedes. *Strobili* aggregati (2. v. 3.), inæquilateri-ovati, 3-pollicares: *squamis* cuneatis, crassissimis, apice dilatatis, obsoletè 4-angularibus, umbilico elevato mucronatis; baseos externæ elongatis, ancipiti-compressis, callosis, rigidis, lævibus, nitidis, recurvato-patentibus.

This belongs to the same group as the preceding. The cones are much the smallest of the section, being not larger than those of *P. inops*, and are remarkable for the great degree of development of the scales at their external base.

Found by Dr. Coulter at San Luis Obispo in latitude 35°, and at an elevation of 3000 feet above the level of the sea, from which the locality is distant about ten miles. The tree is straight and rather stunted, not exceeding 40 feet in height. The cones grow two or three together. I regret that I have not seen the leaves of this and the two following species; but it is probable that, like the greater part of the American Pines, they grow in threes.

## 3. PINUS RADIATA.

*P. foliis ternis? strobilis inæquilateri-ovatis : squamis radiato-rimosis umbilico depresso truncatis ; baseos externæ triplò majoribus gibbosis subrecurvis.*

*Habitat* in Californiâ, in maris littore ad Monterey. *Coulter. h. (v. s. sp.)*

*Arbor* rectissima, altitudinem circiter 100 pedes attingens, ramis latè patentibus copiosis ad basin usque ornata. *Strobili* aggregati, ovati, 6-pollicares, basi exteriore ventricosi: *squamis* cuneatis, crassis, spadiceis, nitidis, apice dilatatis, depressis, quadrangulis, radiato-rimosis, umbilico depresso ; ad basin exteriorem triplò majoribus, apicibus elevatis, gibbosis, subrecurvis.

Found by Dr. Coulter about Monterey in latitude 36°, near the level of the sea, and growing almost close to the beach. The trees grow singly together, and reach the height of 100 feet, with a straight trunk, feathered with branches almost to the ground. It affords excellent timber, which is very tough, and admirably adapted for building boats, for which purpose it is much used.

## 4. PINUS TUBERCULATA.

*P. foliis ternis? strobilis inæquilateri-oblongis aggregatis : squamis apice quadrangulis umbilico depresso truncatis ; baseos externæ majoribus elevatis conicis.*

*Habitat* in Californiâ, in maris littore ad Monterey. *Coulter. h. (v. s. sp.)*

*Arbor* 100-pedalis. *Strobili* oblongi, aggregati (3), fulvo-cinerei, 4-pollicares, 2½ uncias crassitie adæquant: *squamis* cuneatis, apice dilatatis, quadrangularibus, umbilico depresso truncatis, ad basin exteriorem majoribus apice elevatis, conicis.

Found by Dr. Coulter along with the preceding, which it resembles in size and habit, but is essentially distinguished by the form of its cones.

## 5. PINUS BRACTEATA.

*P. foliis solitariis bifariàm patentibus linearibus mucronatis planis subtùs ar-*

genteis, strobilis ovatis, bracteolis trilobis; laciniâ intermediâ longissimâ foliaceâ recurvatâ.

*Habitat* in Californiâ, in montibus Sanctæ Luciæ, alt. 3000 ped. *Coulter*. ♀.  
(v. s. sp.)

*Arbor* elongato-pyramidata. *Truncus* rectissimus, gracillimus, 120 pedes altus, crassitie ad basin vix pedali, tertiâ parte superiore ramis tantum onustus, cortice badio obductus. *Rami* verticillati, patentes; *inferiores* leviter decumbentes. *Folia* conferta, undique inserta, bifariam tamen patentia, linearia, mucronata, plana, coriacea, rigida, bi- v. nunc ferè tri-pollicaria, lineam circiter lata, suprâ lætè viridia, nitida, lineâque depressiusculâ exarata, subtùs argenteâ, margine parùm revoluta, costâ apiceque callosis. *Strobili* in ramis tantum adultioribus solitarii, laterales, subsessiles, erecti, ovati, turgidi, vix 4-pollicares, diametro 2-unciales, basi squamis pluribus ovato-oblongis, acutis, scariosis, laceris, spadiceis, revolutis, persistentibus muniti: *squamis* reniformi-rotundatis, concavis, stipitatis, substantiâ crassis, induratis, pallidè fuscis, margine incurvis, crenulatis, extùs rore glauco cœrulescentibus, stipite suprâ acutè carinatâ, disco brevior. *Bracteæ* cuneatæ, adpressæ, coriaccæ, rigidæ, squamis concolores et iisdem breviores, infernè adnatæ et callosæ, apice trilobata; *lobis laterali-bus* brevissimis, rotundatis, erosè dentatis; *intermedio* recurvato, sesqui-pollicari, foliis propriis omninò conformi! sed duplò angustiore. *Semina* cuneato-oblonga, tetragona; *testâ* *exteriore* (priminâ) cinereo-fulvâ, angulo interno disjunctâ, apertâ, ibique nucleum exponente, apice in alam inæquilateri-obovatam, integerrimam, tenuissimè membranaceam, planam, reticulatam extensâ. *Nucleus* testâ propriâ (secundinâ) crustaceâ sordidè fuscâ inclusus, apice alâ brevissimâ membranaceâ erosâ coronatus.

This curious and interesting species of Fir was discovered by Dr. Coulter on the sea side of the mountain range of Santa Lucia, about 1000 feet lower down than *Coulteri*. The trunk rises to the height of 120 feet, is very slender, not exceeding two feet in circumference, and as straight as an arrow. The upper third of the tree is clothed with branches, giving it the appearance of an elongated pyramid. The branches are spreading, the lower ones are decumbent. The bractes are long and recurved, and but little changed from

the ordinary leaves, which give the cones a singular appearance. The seeds are remarkable for a peculiarity in their structure, in having the nucleus exposed at the inner angle of the seed through a considerable opening in the outer testa, as if the junction of the two sides had been prevented by the rapid enlargement of the nucleus\*. It is only the middle branches that bear cones.

\* This peculiarity in the structure of the seeds I have since noticed also in *P. Webbiana*, and in several other species belonging to the group of silver firs.